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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/983,074

10/23/2001

Eiichi Tamaki

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7590

04/15/2003

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EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 04/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/983,074

Applicant(s)

TAMAKI, EIICHI

Examiner

Hai C Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-3, 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Ramanujan et al. (U.S. 6,084,626).

Ramanujan et al. discloses a laser printer comprising a laser source for emitting a first laser beam (laser diode 11 emitting linearly polarized light), a first optical system (wave plate 29) for converting the first laser beam into a second laser beam, a diffraction grating light valve (grating modulator array 40) having a plurality of reflective elements (reflective modulator sites 43) arranged in a predetermined direction (parallel to z-axis) for converting the second laser beam into modulated signal beams, and a

second optical system (deflector 30) for directing the signal beams onto a medium (media plane 90), wherein the second laser beam is linearly polarized in a direction parallel to the predetermined direction (the wave plate 29 disposed prior to the grating modulator array 40 being used to orient the polarization of the light beam since the modulator sites 43 of the grating modulator array requires properly oriented polarized light in order to function optimally) (col. 7, lines 1-5).

With regard to claims 2-3, Ramanujan et al. teaches the first optical system being a polarization direction converter or a phase plate (wave plate 29) for converting a polarization of the first laser beam.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ramanujan et al.

Although Ramanujan et al. does not explicitly teach the wave plate (29) being a half-wave plate or the first laser beam being linearly polarized in a direction parallel to the orientation of the grating modulator, Ramanujan et al. does indicate that the "wave plate 29 *can* be placed prior to the grating modulator array ... to modify the incident polarization (col. 7, lines 3-5), meaning that either the laser source could be arranged so

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that the linearly polarized laser beam match the electric-field orientation of the modulator sites of the grating modulator array or the use of a proper wave plate that would include a half-wave plate to provide a proper incident light polarization. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a half-wave plate in the device of Ramanujan et al. for the purpose of modifying the incident polarization of the laser beam to match with that of the grating modulator array.

5. Claims 4, 6, and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ramanujan et al. in view of Sakata (U.S. 4,729,640).

Ramanujan et al. discloses a laser diode emitting a laser beam at a wavelength of 830 nm, and thus fails to teach the peak wavelength of the laser beam being within the range of 800 nm to 820 nm, as well as the zero-order diffracted light beam.

Nevertheless, it is well known in the art that the pitch and the height or thickness of the gratings of the diffraction grating modulator are in close relationship with the wavelength of the laser source in order to produce zero-order diffracted light beams, as evidenced by Sakata, which discloses a liquid crystal/grating light modulation device whose structure is adapted to a laser source emitting a laser beam at a wavelength of 8200 Å (820 nm) for producing a modulated zero-order light.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the range of the peak wavelength of the laser source as taught by Sakata for the device of Ramanujan et al. The motivation for doing so would

have been to provide optimal function between the laser source and the grating modulator in producing modulated zero-order light beam.

With regard to claims 10 and 13, although Ramanujan et al. does not explicitly teach the wave plate (29) being a half-wave plate or the first laser beam being linearly polarized in a direction parallel to the orientation of the grating modulator, Ramanujan et al. does indicate that the "wave plate 29 *can* be placed prior to the grating modulator array ... to modify the incident polarization (col. 7, lines 3-5), meaning that either the laser source could be arranged so that the linearly polarized laser beam match the electric-field orientation of the modulator sites of the grating modulator array or the use of a proper wave plate that would include a half-wave plate to provide a proper incident light polarization. Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to either arrange the laser source or provide a half-wave plate in the device of Ramanujan et al. for the purpose of modifying the incident polarization of the laser beam to match with that of the grating modulator array.

Response to Arguments

6. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

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Additional Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reznichenko et al. (U.S. 6,229,650 B1) discloses an optical imaging device using a diffraction grating light valve to produce modulated zero-order light beams for forming image on a recording medium.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

April 9, 2003